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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,064	08/06/2003	Christopher Hable	1001-121	1317
25215 7590 06/12/2008 DOBRUSIN & THIENNISCH PC 29 W LAWRENCE ST SUITE 210 PONTIAC, MI 48342				
EXAMINER				
TOLIN, MICHAEL A				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/635,064

**Applicant(s)**

HABLE ET AL.

**Examiner**

MICHAEL A. TOLIN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2008.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 7, 9 and 23-45 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1, 7, 9 and 23-45 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 06 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2-28-08  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7, 9, and 23-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is dependent on canceled claim 3. For the purpose of examination it has been presumed that claim 7 should be dependent on independent claim 1.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kagoshima (US 5274006) in view of Agarwal (US 2003/0018095), Harrison (US H2047), and Czaplicki (WO 01/68342), and optionally further in view of any one of Kim (US 6333102), Gamault (WO 02/48277, referencing US 2004/0058181 as an English language equivalent), or Hilborn (US 6348513).

Kagoshima forms a foamable epoxy resin composition using liquid epoxy resin as a major component (Abstract; column 2, lines 45-68; column 3, lines 1-13; column 6, lines 53-68). While Kagoshima explains that the composition is adhesive at a temperature below the activation temperature (column 6, lines 53-68), Kagoshima does not explicitly recite tackiness at a temperature in the claimed range. However, such compositions are inherently tacky at a temperature in the claimed range. As evidence for this assertion, Agarwal is cited here. Agarwal explains that conventional foamable compositions comprising liquid epoxy resins as a major component tend to be very tacky during assembly and handling steps, steps which are performed at ambient conditions within the claimed temperature range (paragraph 4).

Kagoshima does not recite the claimed covering step to provide at least one substantially non-tacky surface and at least one tacky surface. It is noted that Kagoshima is directed to attaching the material to a substrate by adhering (column 6, lines 61-64; column 7, lines 10-22; Example 1). Kagoshima also suggests adhering the material to a substrate while one surface is covered with a non-tacky release paper (column 8, lines 10-14). However, it is also generally known to provide a non-tacky layer which is not removed to provide ease of handling of a tacky material. For example, Harrison explains that a carrier layer which is not removed can be used to render one side of a laminate non-tacky to allow the laminate to be more easily manipulated, handled and stored (column 8, lines 7-22). Czaplicki suggests the use of an outer adhesive film for an expandable material wherein the adhesive is generally dry to the touch at room temperature, but which adheres to a substrate upon thermal

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activation of the expandable material (Abstract; page 2, lines 17-34). Czaplicki explains that providing such a separate non-tacky adhesive layer allows the outer adhesive film and inner expandable material to be separately specialized for different primary functions (page 2, lines 5-16). It is noted that Czaplicki contemplates embodiments where the inner expandable material is not completely covered (page 4, lines 5-6). Thus in view of Harrison and Czaplicki, one of ordinary skill in the art would have readily appreciated that providing a non-tacky adhesive film on one side of Kagoshima's expandable material provides ease of handling while maintaining the ability to expand and adhere to substrate surfaces upon activation. It would have been readily apparent to one of ordinary skill in the art that such a modification to Kagoshima eliminates the need to remove and dispose of a release sheet, or simply that such a modification is a suitable manner of providing the material of Kagoshima with ease of handling. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed covering step because one of ordinary skill in the art would have been motivated to eliminate the need to remove and dispose of a release sheet, or simply to provide the material of Kagoshima with ease of handling in accordance with the teachings and suggestions of Harrison and Czaplicki.

As to the claimed epoxy-elastomer adduct up to about 30% by weight of the film, the use of such adducts in epoxy adhesive compositions is generally known. It is first noted that Kagoshima suggests the use of epoxy modified butadiene-acrylonitrile rubber (column 5, lines 23-24), which satisfies the claimed adduct, for the purpose of imparting toughness and controlling melt viscosity (column 5, lines 34-36). Kagoshima further

suggests providing this material in an amount of approximately 10-65% by weight (column 2, lines 47-55). The film material of Czaplicki is preferably epoxy-based (page 7, lines 29-34). Accordingly, it appears that one of ordinary skill in the art would have provided the claimed adduct in an amount of less than about 30% by weight as a matter of routine experimentation in view of the range suggested by Kagoshima in order to achieve desired toughness and melt viscosity in accordance with the teachings of Kagoshima. As further evidence for this assertion, Kim suggests providing an epoxy-elastomer adduct in an epoxy-based expandable adhesive material in an amount of 10-14 weight percent to achieve suitable adhesion and impact resistance (column 2, lines 40-49; column 3, lines 4-16). Garnault suggests the use of elastomer-modified epoxy resin and an amount of about 2-10 weight percent in an expandable adhesive epoxy-based composition (paragraphs 10, 28, 43-44). Agarwal suggests an epoxy modified rubber in an amount of 0-25 weight percent, preferably 1-10% in an epoxy-based expandable adhesive in order to improve toughness and reduce tendency to crack under stress (paragraph 27, 30-31). Hilborn suggests the use of functional rubber additives in an epoxy-based expandable adhesive as toughening agents and flexibilizers in an amount of up to 15% and preferably 0.5-10% (column 6, lines 55-67; column 7, lines 1-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed adduct in an amount within the claimed weight percent range because one of ordinary skill in the art would have been motivated to provide suitable toughening or flexibilizing as a matter of routine experimentation in view of the ranges suggested by any one of Kim, Garnault, Agarwal, or Hilborn.

The limitation of claim 45 is clearly suggested by Czaplicki (page 7, lines 23-28).

5. Claims 7, 9, and 23-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kagoshima in view of Agarwal, Harrison, and Czaplicki, and optionally further in view of any one of Kim, Garnault, or Hilborn as applied to claims 1 and 45 above, and further in view of any one of Kiuchi et al. (US 7029550 B2), Middelman et al. (US 5496613), or Asoshina et al. (4728544).

Kiuchi, Middleman, and Asoshina are applied as set forth in numbered paragraph 6 of the previous office action mailed 28 November 2007 for providing motivation to provide the claimed correspondence components. The rejection of numbered paragraph 6 in the previous office action is incorporated herein for addressing the limitations of claims 9 and 23-34.

6. Claims 35-38, 40-42, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kagoshima in view of Agarwal, Harrison, Czaplicki, Garnault and Hilborn, and optionally further in view of Kim.

The above rejection of claims 1 and 45 is incorporated herein.

Regarding claims 35, 36, and 44, inorganic and polymeric fillers, curing agents, and blowing agents are generally conventional in the art. For example Garnault suggests the use of inorganic and organic fillers, the organic fillers including methacrylate (paragraphs 35-37). Hilborn suggests the use of clay as an inorganic filler (column 6, lines 35-53). Kagoshima also suggests clay (column 6, lines 23-26). As is

well known, fillers may be used to adjust flow properties or merely to reduce cost. Kagoshima teaches curing agents for an epoxy-based system (column 3, lines 14-37) and a blowing agent to achieve the desired expansion (column 3, lines 53-68; column 4, lines 1-37).

The limitations of claims 37 and 38 have been satisfied for the reasons set forth above in the rejection of claims 1 and 45 which has been incorporated herein.

Regarding claims 40-42, the use of a carefully controlled ratio of liquid and solid epoxy is known in order to provide a desired level of tackiness, as taught by Hilborn (column 3, lines 49-67; column 4, lines 1-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the claimed liquid and solid epoxy resins in the film in order to provide the generally dry to the touch property suggested by Czaplicki in accordance with known methods as evidenced by Hilborn.

7. Claims 39 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kagoshima in view of Agarwal, Harrison, Czaplicki, Garnault and Hilborn, and optionally further in view of Kim as applied to claims 35-38, 40-42 and 44 above, and further in view of Golden (US 2002/0009582).

As to the particular epoxy-elastomer adduct composition, ratios of epoxy to elastomer in the claimed range are generally well known for such adducts. For example, Golden suggests a ratio in the claimed range for use in epoxy-based adhesive compositions (Examples 1 and 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to use epoxy to elastomer ratios within the claimed

range because one of ordinary skill in the art would have been motivated to use known suitable ratios as evidenced by Golden.

### ***Response to Arguments***

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. TOLIN whose telephone number is (571)272-8633. The examiner can normally be reached on M-F 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael A Tolin/  
Examiner, Art Unit 1791

/Richard Crispino/  
Supervisory Patent Examiner, Art Unit 1791